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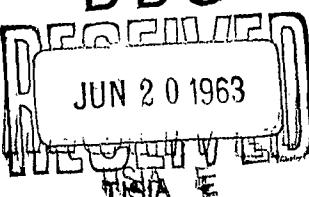
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FOREWORD

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THIRD ALL-UNION CONFERENCE ON
ELEMENTARY PARTICLE THEORY

[Following is the translation of an article by Yu.M. Lomsadze, V.I. Lend'yel, I.Yu. Krivskiy, and I.VI Khimich in the Ukrainian-language periodical Ukrains'kiy Fizichniy Zhurnal (Ukrainian Physics Journal), Vol VII, No 4, April 1962, pp 458-454.]

"Theoretical and experimental research in the field of nuclear physics and the physics of elementary particles will continue to be one of the central trends in science"

(From the address of M.V. Keldysh, President of the Academy of Sciences USSR, before the All-Union Congress of Scientific Workers in the Kremlin, 12 June 1961)

As is known, in recent years regular All-Union Conferences on Quantum Field Theory and Elementary Particles have been held at Uzhgorod University. The first such conference was held at Uzhgorod in the fall of 1958 and the second in the spring of 1960 (Ukrains'kiy Fizichniy Zhurnal, October 1960, No 5, p 865).

The regular Third All-Union Conference on Elementary Particle Theory took place on 2-8 October 1961 at Uzhgorod University. This Conference was the largest of the three, both with respect to the number of participating delegates and the number of papers presented. The delegates heard 92 papers of a high scientific level. The Conference was attended by over 120 theoretical and experimental physicists, among them representatives of all academic and research institutions in the country working on the problems of elementary particles: Moscow, Leningrad, Tbilisi, Dnepropetrovsk, and Uzhgorod Universities, the Tomsk Polytechnic Institute, the Physics Institute imeni P.M. Lebedev of the Academy of Sciences USSR (FIAN), the Joint Nuclear Research Institute (OIIYaD), Theoretical and Experimental Physics Institute of the Academy of Sciences USSR (ITEF), the Physico-Technical Institute of the Academy of Sciences USSR (FTI, Leningrad), the Mathematics Institute imeni Steklov of the Academy of Sciences USSR,

institutes of the Siberian Branch of the Academy of Sciences USSR (Mathematics Institute and Computing Center, Nuclear Physics Institute, Radiophysics and Electronics Institute), and scientific research institutions of the fraternal republics: the Physics Institute of the Academy of Sciences Belorussian SSR, the Nuclear Physics Institute Academy of Sciences Kazakh SSR, the Physics Institute of the Academy of Sciences Georgian SSR, Physics and Astronomy Institute of the Academy of Sciences Estonian SSR, as well as Ukrainian scientific research institutions: the Physico-Technical Institute of the Academy of Sciences Ukrainian SSR (FTI, Khar'kov), the Mathematics Institute of the Academy of Sciences Ukrainian SSR, and other institutions.

Among the Conference delegates were the following world-famous Soviet scientists: Academician V.A. Fok, Corresponding Member of the Academy of Sciences USSR A.V. Migdal, Academician of the Academy of Sciences USSR A.K. Val'ter, Corresponding Member of the Academy of Sciences Belorussian SSR F.I. Fedorov, Moscow University Professors D.D. Ivanenko and A.A. Sokolov, Leningrad University Professors Yu.V. Novozhilov and M.G. Veselov, Professors A.A. Verob'yev, Ya.A. Smorodinsky, and Yu.B. Rumer, Senior Scientific Researchers Yu.M. Shirkov, V.Ya. Faynberg, B.L. Yoffe, V.S. Barashenkov, et al.

Below we present brief resumes of the Conference papers, grouped by theme.

1. The Dispersion Approach

The report of D.V. Shirkov (Mathematics Institute of the Siberian Branch of the Academy of Sciences USSR) contained a brief survey of the present state of particle scattering theory (low-energy particle scattering) based on the analytic properties of the scattering matrix and the unitarity condition.

V.V. Serebryakov and D.V. Shirkov (Mathematics Institute of the Siberian Branch of the Academy of Sciences USSR, Novosibirsk) spoke on a numerical method for solving integral equations. The basic result of this work was the derivation of a sufficiently narrow p-p scattering resonance.

V.I. Kolomiytsev (Mathematics Institute of the Academy of Sciences Ukrainian SSR) reported on his derivation of dispersive Mandelstam relations in sixth-order perturbation theory.

I.M. Dr'yomin (FIAN) showed that the cross-section of π -N interactions is an analytic function of virtuality, which permits the application of the Chu extrapolation procedure.

A.D. Galanin, A.F. Grashin, V. Mel'nikov, and Yu.P. Nikitin (IIPF) in their paper examined the effects of π -N interactions in electromagnetic form-factors of nucleons in N-N scattering.

The analytic properties of quadratic diagrams with sufficient masses were discussed by G.S. Danilov, V.N. Gribov, and I.T. Dyatlov (FTI, Leningrad).

V.K. Fedyanin (Peoples' Friendship University imeni Patrice Lumumba) described dispersion ratios for the Compton effect for nucleons, and also carried out a numerical comparison of the resulting ratios with experimental values obtained with the dipole approximation.

I.M. Dr'yomin and D.S. Chernavskiy (FIAN) examined the asymptotic properties of the interaction cross-section of a virtual particle with a real one.

I.I. Royzen and D.S. Chernavskiy (FIAN) showed that if as had been supposed, at high energies elastic collisions have a diffraction character, interference between single-meson and multi-meson amplitudes is not observed.

The paper of L.A. Khalfin (Leningrad Higher Mathematical Institute imeni Steklov, Leningrad) showed that solely on the basis of dispersion relations for frontal scattering amplitudes and the virtuality relation, no limits can be imposed on the possible values for the particle masses and interaction constants.

V.D. Skarzhinsky (FIAN) determined the dispersion ratios for the electron form factor with respect to the variable p^2 in a non-linear approximation, deriving and analyzing the integral equations for the form factor.

M.A. Braun (Leningrad University) examined the analytic characteristics of a stable function for superposition of Yukawa potentials.

The specification of dispersion relations for meson photogeneration was treated in the report of A.M. Baldin and A.I. Lebedev (FIAN). The results of their calculations are in agreement with experiment for threshold values of the transferred moment, but do not converge for $E_{\gamma\text{lab}} = 185$ mev.

Ya.I. Granovsky and A.A. Pantyushin (IYaF Academy of Sciences Kazakh SSR) considered the partial amplitudes of $K\bar{N}$ -scattering in a static approximation and obtained numerical values for the scattering phases.

Applying an approximation technique with respect to energy and using experimental data on low-energy p-p scattering, Yu.M. Lomsadze, V.I. Iend'yel, and B.M. Ernst (Uzhgorod University) calculated the interaction constant of the π -meson field with the nucleon field; its highest values turned out to be $f^2 = 0.038 \pm 0.012$.

The basic result of the calculation of dispersion relations for $K\bar{N}$ scattering carried out by Ya.I. Granovsky and V.M. Starikov (IYaF Academy of Sciences Kazakh SSR), were the value $g^2/4\pi = 13.1 \pm 1.0$ for the interaction constant and parity values $P_K \cdot P_{\bar{N}} < 0$.

The same result with regard to parity was confirmed by an analogous effort by V.I. Lend'yel, B.M. Ernst, L.M. Poyev, T.Yu. Medvedeva, and Yu.M. Marini (Uzhgorod University). The probable inaccuracy of existing values for g_F^2/k^2 was also pointed out.

V.V. Anisovich (PTI, Leningrad) obtained dispersive representations for the deuteron form factor.

2. Strong Interactions

V.S. Barashenkov (OIIYaD) presented a survey and cited his own experimental data on electrical and magnetic nucleon polarization.

V.I. Rus'kin and D.S. Chernavskiy (IYaF Academy of Sciences Kazakh SSR and FIAN) calculated the angular correlations between π -mesons first in processes of multiple particle production and then in the 3π -meson p-p annihilation process. On the basis of these calculations, a number of conclusions concerning π - π interaction resonance were drawn.

B.T. Vavilov, N.G. Goncharova, V.I. Grigor'yev, and G.V. Meledin (Moscow University) attempted to examine the processes of multiple π -meson production upon collision of high-energy particles with the aid of quantum field theory in the Blich approximation. They succeeded in obtaining a qualitative agreement with experiment for medium energies both with dependence of particle yield on energy and with angular and energy distributions of mesons.

Ya.I. Granovskiy (IYaF Academy of Sciences Kazakh SSR) tried to determine resonance in K-N scattering for $T = 0$ for an energy close to 650 mev.

In his survey, A.I. Lebedev (FIAN) dealt with theoretical and experimental data on photonic meson production near the threshold.

A. Nikishov (FIAN) showed that in the polar approximation, the cross-section of the process of charged π -meson production with energies greater than $E/3$ by nuclear bombardment with μ -mesons is about 10^{-31} cm^2 , and analyzed this result.

V.A. Lyul'ka, V. Vas'kov, and Vedrinskiy (Moscow University) reported on their studies of hypernuclear decay, as well as on the possibility of Λ -hyperon interaction with nucleons.

A.M. Kol'chuzhkin and N.N. Kolesnikov (Moscow University) carried out a phenomenological analysis of Λ -N interactions for light hypernuclei ($A < 15$) using an electronic computer, and calculated the transverse cross-section of radiation capture of Λ -particles by light nuclei. The result can be employed for the determination of the magnetic moment of Λ -particles.

Yu.D. Bayukov and G.A. Leksin (ITEF) reported on measurements of π -N diffraction at large angles.

D.V. Volkov and M.P. Rekalo (FTI of the Academy of Sciences Ukrainian SSR, Khar'kov) showed that the analysis of interference effects between processes of photonic production of π^0 -mesons in the Coulomb field of the nucleus and at individual nuclei makes it possible to determine the sign of the amplitude of one of the processes when the sign of the amplitude of the other one is known. They carried out an evaluation of these interference effects in the range 500-700 mev and their dependence on the sign of the amplitude of $\pi^0 \rightarrow 2\gamma$ decay.

S.A. Bunyatov (OIYaD) analyzed experiments which might yield information on π -N interaction.

3. Weak and Electromagnetic Interactions

A.A. Sokolov, Yu.M. Loskutov, B.A. Lissov, and I.M. Ternov (Moscow University) introduced a generalized spin pseudotensor for the Dirac particle, showed a method of relativistically invariant representation of its polarization states, and developed on this basis an invariant technique for calculating polarization effects.

I.Yu. Kobzarev and L.B. Okun' (ITEF) described a model of anomalous muon interaction.

V.M. Shekhter (FTI Academy of Sciences USSR, Leningrad) described processes which occur in neutrino capture by nucleons.

S.G. Matinyan (Physics Institute Academy of Sciences Georgian SSR, Tbilisi) suggested a method for the experimental determination of the mass difference of K_1^0 - and K_2^0 -mesons by studying the interference of lepton disintegrations of these mesons with the passage of K_2^0 -meson beams through a plate of material. This method has an advantage over the method advocated earlier by Kobzarev and Okun' and developed by the author himself.

V.N. Bayer and S.A. Heyfets (IYaF Siberian Branch Academy of Sciences USSR) summed a number of cross-sections for electron-electron and electron collisions in a logarithmic approximation with a particle energy $E \gg m$. It was noted that evaluations of inelastic processes in electron-electron collisions carried out by previous authors were incorrect.

The reports of B.V. Geshkenbein and V.S. Popov (ITEF) dealt with the conservation of vector sums in β^- and α^- decay and radiation corrections in these processes.

V.N. Bayer and V.S. Sinakh (IYaF Siberian Branch of the Academy of Sciences USSR) investigated the role of stable states of particle systems (of the $\mu^+ \mu^-$ bimuon type) which can arise as intermediate (or real) states in a number of processes (e.g., high-energy e^-e^+ scattering).

V.N. Bayer and V.V. Sokolov (IYaF Siberian Branch Academy of Sciences USSR) examined those processes in which in virtual states there can arise π^0 -mesons or a hypothetical neutral vectorial f^0 -meson and whose amplitudes for this reason have a pole in the physical region.

A.A. Bogush and L.G. Moroz (Physics Institute of the Academy of Sciences Belorussian SSR, Minsk) in the framework of the "ten-dimensional" (with respect to order of matrices) formulation of Maxwell's equations introduced relativistically covariant generalizations of photon spin operators, which automatically led to the Tomonaga-Schwinger formalization for the electromagnetic field. The resulting formalization makes possible a considerable facilitation of the calculation of various effects.

G.I. Kopilov and I.V. Polubarinov (OIVaD) proposed a numerical method for the construction of Feinmann diagrams with the aid of electronic computers.

L.G. Moroz and I.S. Satsunkevich (Physics Institute of the Academy of Sciences Belorussian SSR, Minsk) suggested that the structure of nucleons or nuclei be investigated through the study of scattering cross-sections of appropriate longitudinally-polarized particles, and by this method calculated the electromagnetic interaction cross-sections of such particles from data on their internal structure. They discussed the possible methods of determining the structure of nucleons and electrons.

V.I. Vorontsov and A.F. Levashov (Kiev University) showed that the antipotential field which is studies in ultra-high-frequency electrodynamics can be regarded as a compensating field of first-order transformations in which the infinitesimal function is a pseudoscalar. It turns out that the Lorentz covariance of electrodynomic equations applies to the antipotential as well as to standard potential.

S.S. Sannikov (FTI Academy of Sciences Ukrainian SSR, Khar'kov) found the differential cross-section of photon scattering in the Coulomb field of the nucleus on the basis of the invariant form of dispersion relations.

A. Nikishov (FIAN) carried out an analysis of experimental data on electromagnetic μ -meson reactions, as well as various hypothetical interactions which could explain the difference between the masses of the μ -meson and the electron.

B.N. Valuyev (OIVaD) presented an evaluation of the lifetime of the π^0 particle.

V.I. Ogiyevetskiy and I.V. Polubarinov (OIVaD) spoke on the possibility of adjusting the calibration invariance of physical matter.

The report of V.S. Yevseyev (OIVaD) dealt with μ -capture by a free proton in complex nuclei.

Yu.A. Simonov (ITEF) analyzed four-fermion interaction on the basis of analyticity and unitarity.

S.G. Matinyan and N.N. Tsilosyani (Physics Institute Academy of Sciences Georgian SSR, Tbilisi) found expressions for transverse cross-sections of the $\gamma + Y \rightarrow \gamma + \bar{\nu}$ process and

the process of photon transformation into a neutrino-anti-neutrino pair in the Coulomb field of a nucleus and also investigated the role of these processes in energy emission by the stars.

L.D. Blokhintsev and Ye.I. Dolinskii (NDIYaF Moscow State University) carried out a theoretical analysis of experimental data on weak μ -meson interactions with nucleons within the framework of Fermi's theory of universal interaction.

V.I. Ritus (FIAN) made some observations regarding the problem of photon transformation into neutron pairs.

V.S. Venyashin (Dnepropetrovsk University), having derived second-order equations for fermions, constructed a theoretical model of four-fermion interaction, whose matrix elements closely agree with the result of ordinary V-A interaction theory, and approach zero with higher approximations; the latter fact demonstrates the non-unitarity of the S-matrix.

L. Palgi (Physics and Astronomy Institute Estonian SSR, Tartu), evaluated the effect of an intermediate hypothetical boson on the probability of μ -meson decay at the K-orbit of the mesoatom.

G.M. Radutskii (Scientific Research Institute of the Tomsk Polytechnic Institute) determined the relative probabilities of various π -meson disintegrations of Ξ -hypernuclei and obtained the energy and angular distributions of the decay products.

V.I. Filimonov (Scientific Research Institute of the Tomsk Polytechnic Institute) reported on his studies of the simplest β -disintegrations of $^{A=2}_\Lambda H^3$ and $^{A=4}_\Lambda H^4$ hypernuclei. He calculated the energy and angular correlations, and spectra of the emitting nuclei and electrons. The resulting values turned out to be highly dependent on the possible hypernuclear spins, which may provide a means for the determination of the latter.

4. Gravitation Theory

The report of Yu.B. Rumer (Radiophysics and Electronics Institute of the Siberian Branch of the Academy of Sciences USSR, Novosibirsk) showed on the basis of invariant theory for a fluctuating gravitational field that weak gravitational fields in free space are describable by two symmetric tritensors $H_{\alpha\beta}^{\gamma}$ and $E_{\alpha\beta}^{\gamma}$ which play the same role in the theory of gravitational fluctuations as do the vectors \vec{H} and \vec{E} in electromagnetic theory.

O.S. Ivanitskaya and A.Ye. Levashov (Kiev University) showed that in order for a gravitational field to be described in Galilean coordinates, it must be compensatory relative to an infinitesimally small conformal transformation which preserves the local invariance of the light cone.

M.P. Korkina (Dnepropetrovsk University) examined a number of problems in the phenomenological theory of interaction

between the electromagnetic (10 X 10-dimensional theory) and gravitational fields.

Yu.S. Vladimirov (Moscow University) on the basis of the Hamiltonian of interaction of a linearized gravitational field with the spinor field carried out concrete calculations of the differential cross-section for electron-electron pair annihilation into two gravitons.

5. Axiomatic and Group-Theoretical Methods

V.O. Fok (Leningrad University) in his paper considered the various types of indeterminate relations between energy and time and indicated their physical interpretation.

The study of V.Ya. Faynberg (FIAN) dealt with local properties of the equation

$$(\square - m^2) \psi(x) = j(x).$$

He presented the necessary and sufficient conditions imposed on the operator $j(x)$ in order for $\psi(x)$ to be local.

Yu.V. Novozhilov (Leningrad University) considered in detail the axiomatic method of operator interpolation in quantum field theory.

F.I. Fedorov and L.G. Moroz (Physics Institute of the Belorussian SSR, Minsk) constructed a diffraction matrix through the calculation of Pauli interactions in the 10-dimensional formulation of the Maxwell equations. In concrete calculations on the basis of this matrix, scattering does not have to be related to a specific coordinate system nor does the explicit form of Dirac matrices have to be used which shortens the calculations significantly.

Ya.A. Smorodinsky (OIIYaD) in his report examined problems on the applications of the so-called small group.

Ye.Ye. Fedorov and Yu.M. Shirokov (NDIYaF Moscow University) showed a method of finding non-linear representations of groups, in particular, finding a most interesting non-linear representation of 3-dimensional rotations, as well as the homogeneous and non-homogeneous Lorentz groups; they also cited some possible physical applications.

A.A. Chashkov and Yu.M. Shirokov (NDIYaF Moscow University) carried out an invariant parametrization of the relativistic diffraction amplitude over specific angles for reactions with particles having sufficient spin and rest mass.

G.A. Sokolik (Moscow University) carried out a classification of representations of the "general" Lorentz group L which is represented as a direct result of the main Lorentz group and the group of space-time inversions, which permitted him to determine all linear equation invariant with respect to the L group. He also considered the question of the possibility of finding equations for anomalous spinors.

A.A. Borgardt (Dnepropetrovsk University) reported on various possibilities for introducing several mass states of free particles into the Dirac and Kammer algebras.

Kh.Kh. Iglyane (Physics and Astronomy Institute of the Academy of Sciences Estonian SSR) examined the possibility of employing generalized group representations rather than isotopic (or charge) spaces for the classification of elementary particles.

V.P. Gachok (Mathematics Institute of the Academy of Sciences Ukrainian SSR) developed an analogue for Haag's theorem in relativistic field theory with weakened conditions of local commutativity.

P.I. Tatsunyak (Mathematics Institute of the Academy of Sciences Ukrainian SSR) reported on various problems of two-dimensional quantum field theory, including the following: finding integral representations for two-dimensional Whiteman functions by means of the Kjellin-Wilhelmsen function, he determined the asymptotic behavior of the Whiteman truncated function for large intervals.

6. New Ideas in General Quantum Field Theory

A.M. Brodskiy, D.D. Ivanenko, and G.A. Sokolik (Moscow University) presented a detailed consideration of the possibility of constructing a single theory of gravitation and ordinary matter on the basis of nonlinear spinor theory. In addition, they noted the possibility of using the concept of a curved space for this purpose.

B.A. Gol'dfand (FIAN) carried out a systematic study of the new geometry (with constant curvature) which arises automatically upon the introduction into the theory of an elementary length that in turn leads to non-commutative "boosting" of pulses at the tops of Feynman diagrams. A definition of deviation in the new theory of ultraviolet disparities was given.

V.I. Rodichev and Yu.S. Vladimirov (Moscow University) developed a concept of curved space to obtain equations of the Heisenberg-Ivanenko type with a pseudovectorial nonlinear term. They described several possible interpretations of the rotation field.

Yu.M. Lomsadze (Uzhgorod University) suggested the use of the possible analyticity of matrix elements with respect to the field state constant for the approximate expansion of matrix elements with respect to coefficients by a method of perturbations in the occurrence of strong quantum field interactions.

Yu.M. Lomsadze, I.Yu. Krivskiy, and I.V. Khimich (Uzhgorod University) reported on various results of the so-called theory of the probability amplitude of the quantum field which is a generalization of ordinary quantum field theory and automatically corrects individual measurement errors.

D.A. Kirzhits (FIAN) noted that various theories are involved in the problem of whether the form factor is introduced into the Lagrangian or Hamiltonian rather than two forms of

the same theory, as was thought earlier. This may provide a fundamental possibility of constructing an internally consistent theory.

L.A. Khalfin (LVMI imeni Steklov, Leningrad) spoke on the quantum theory of unstable elementary particles, including the theory of unstable elementary particle decay and diffusion; he described experiments which substantially refine our notions of unstable elementary particles.

7. Other Problems

R.A. Minlos and L.D. Fadeyeva (Moscow University) considered problems of the point interaction of three particles in quantum mechanics.

V.V. Balashov, V.B. Belyayev, and R.A. Yeramzhan (NDIYaF Moscow State University) considered the effect of residual interactions in nuclei on the probability of partial transitions in the reaction $\mu + O^{16} \rightarrow Ni^{19} + \nu$ within the framework of a model of intermediate binding in the theory of μ -capture by composite nuclei.

G.B. Kutuzov and Kh.Kh. Iyglane (Physics and Astronomy Institute of the Academy of Sciences Estonian SSR) showed that depending on the conditions of transformation of the oscillatory function, both bosons and fermions can be described with the aid of the first-order equation they proposed.

G.B. Kutuzova (Physics and Astronomy Institute Academy of Sciences Estonian SSR) on the basis of an analysis of the Fock-Kemmer-Deffin equation in the nonrelativistic approximation came to the conclusion that the state of the moving boson is the superposition of states with spins of 0 and 1.

V.I. Mal'chenko (Dnepropetrovsk University) reported on analytic characteristics of partial diffraction amplitudes of Klein-Gordon particles on spherically-symmetric potentials of the type $F(\eta) e^{-\eta r}$, $\lim_{r \rightarrow 0} \eta F(\eta) = 0$.

The paper by M.Sh. Pavzner (Dnepropetrovsk University) analyzed the phenomenological quantum electrodynamics formulated by Watson and Jauch in 1948-1949; various supplementary results were obtained.

L.R. Lebedev (Dnepropetrovsk University) attempted to obtain a number of observable characteristics (including the mass spectrum) of fermions entering into Dirac's equations with respect to some source, taken as zero only in the first region of space-time.

A.N. Kushnirenko (Kiev University) reported on the possibility of employing the methods of mathematical physics (the moment method, the method of Bubnov-Galerkin, etc.) for the calculation of the S-diffraction matrix.

V.A. Selokon' (Chemical Physics Institute of the Academy of Sciences USSR) cited measurements relating to the mass spectra of elementary particles and the quantization of space-time.

P.A. Usik (IYaF Academy of Sciences Kazakh SSR, Alma-Ata) examined problems of the repulsion potential conditioned by the Pauli principle at small distances between two like fermions and compared his results with the ideas recently elaborated by Sakura.

The Conference likewise included a section on photo-nuclear reactions.

Despite the wide range of subjects considered at the Conference, it proceeded on a high scientific level, as was noted in the resolution of the organizing committee. There were lively and sometimes even heated, but always business-like discussions, which often continued full force in the lounges. It is necessary to note the importance, especially for young physicists, of these informal discussions.

Copies of the report abstracts were distributed prior to the start of the Conference. The proceedings are to be published. The participants enjoyed a one-day excursion in the Transcarpathian area. Under the auspices of the Joint Nuclear Research Institute and Uzhgorod University, an International Conference of scientists from countries cooperating with the Institute on high-energy particle physics is to be held in Uzhgorod in the autumn of 1962.

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LIST OF PERSONNEL OF THE THIRD CONTINENTAL EXPEDITION

[Following is the translation of a list in the Russian-language publication Trudy Sovetskoy Antarkticheskoy Ekspeditsii (Proceedings of the Soviet Antarctic Expedition), Vol 16, pages 323-328.]

Expedition Leaders

1. Tolstikov, Yevgeniy Ivanovich -- leader of expedition, Candidate of Geographical Sciences.
2. Kibalin, Aleksandr Pavlovich -- assistant expedition leader.
3. Parfenov, Vladimir Ivanovich -- chief engineer.
4. Lebedev, Vladimir L'vovich -- scientific secretary, Candidate of Geographical Sciences.

The Mirnyy Station

Geophysics Staff

1. Ostrekin, Mikhail Yemel'yanovich -- staff chief, Candidate of Geographical Sciences.
2. Filin, Timofey Dmitriyevich -- magnetologist, Candidate of Physico-Mathematical Sciences.
3. Galkin, Andrey Ivanovich -- junior scientific associate, ionosphericist.
4. Goncharov, Igor' Nikolayevich -- junior scientific associate, cosmic ray specialist.
5. Vinnik, Lev Pavlovich -- junior scientific associate, specialist on polar airglow.
6. Pleshkevich, Leonid Nikolsyevich -- junior scientific associate, specialist on terrestrial currents.
7. Nikolayev, Igor' Vasil'yevich -- junior scientific associate, seismologist.
8. Agafonnikov, Yury Mikhaylovich -- engineer-ionosphericist.
9. Safronov, Vladimir Dmitriyevich -- engineer, specialist on cosmic rays.

Aerometeoro logical Staff

1. Bugayev, Viktor Antonovich -- staff chief, Candidate of Physico-Mathematical Sciences.
2. Belov, Vladimir Filippovich -- senior scientific associate, meteorologist, Candidate of Physico-Mathematical Sciences.
3. Vasyukov, Konstantin Azarovich -- senior scientific associate, synoptologist, Candidate of Physico-Mathematical Sciences.
4. Gruza, Georgiy Vadimovich -- junior scientific associate, meteorologist.
5. Lobodin, Tikhon Vasil'yevich -- junior scientific associate, meteorologist.
6. Izotov, Yevgeniy Alekseyevich -- junior scientific associate, meteorologist.
7. Babkin, Aleksandr Vasil'yevich -- junior scientific associate, synoptologist.
8. Mukhanov, Leonid Filippovich -- meteorological engineer.
9. Petrov, Nikolay Nikolayevich -- radar engineer.
10. Torzhutkin, Oleg Aleksandrovich -- radar engineer.
11. Mishakin, Pavel Pavlovich, senior technician, meteorologist.
12. Vasil'yev, Boris Vasil'yevich -- senior technician, aerologist.

Glaciological Staff

1. Zakiyev, Khristofor Yakovlevich -- staff chief, Candidate of Geographical Sciences.
2. Yermakov, Vladimir Fedorovich -- junior scientific associate, specialist on ice mechanics.
3. Pyatnitskiy, Viktor Vladimirovich -- junior scientific associate, specialist on ice petrography.
4. Sorokhtin, Oleg Georgiyevich -- junior scientific associate, seismological apparatus engineer.
5. Koptev, Vladimir Ivanovich -- junior scientific associate, seismological apparatus engineer.
6. Kulakov, Yuriy Mikhaylovich -- glaciological engineer.
7. Nikitin, Nikolay Petrovich -- senior laboratory technician.
8. Burov, Gennadiy Aleksandrovich -- detonation specialist, seismic surveyor.
9. Vorob'yev, Georgiy Yefimovich -- detonation specialist, seismic surveyor, radio operator.

Aerial Photography Staff

1. Burlachenko, Mikhail Grigor'yevich -- staff chief.
2. Malyutin, Nikolay Safronovich -- senior engineer, aerial photographer.
3. Lavrenov, Ivan Dmitriyevich -- senior laboratory technician, aerial photographer.

Hydrology Staff

1. Izvekov, Mikhail Vasil'yevich -- staff chief, hydrologist.
2. Makushok, Viktor Markelovich -- junior scientific associate, biologist.
3. Matveyev, Anton Antonovich -- senior laboratory technician, hydrochemist.

Communications and Radio Navigation Staff

1. Fedorenko, Yuriy Vasil'yevich -- staff chief.
2. Tselishchev, Petr Dmitrievich -- radio engineer.
3. Bolvin, Gennadiy Ivanovich -- senior radio technician, synoptologist.
4. Volkov, Viktor Nikolayevich -- senior radio technician.
5. Laptev, Vasiliiy Petrovich -- senior radio technician.
6. Romanov, Pavlin Mikhaylovich -- senior radio technician.
7. Vetrov, Yevgeniy Timofeyevich -- senior radio technician.
8. Sazonkin, Viktor Sergeyevich -- senior radio technician.
9. Bogomolov, Vasiliiy Il'yich -- radio technician.
10. Boronin, Viktor Timofeyevich -- radio technician.
11. Zhurenko, Il'ya Aleksandrovich -- radio technician.
12. Ushakov, Mikhail Kuz'mich -- radio technician.
13. Fayencov, Anatoliy Ivanovich -- radio technician.
14. Yakunin, Viktor Vasil'yevich -- radio technician.

Aviation Staff

1. Perov, Viktor Mikhaylovich -- staff commander.
2. Ryzhkov, Sergey Vasil'yevich -- aircraft commander.
3. Shkol'nikov, Nikolay Alekseyevich -- aircraft commander.
4. Grigor'yev, Viktor Vasil'yevich -- aircraft commander.
5. Zotov, Leonid Ivanovich -- aircraft commander.
6. Ivanov, Fedor Yakovlevich -- aircraft commander.
7. Afonin, Vladimir Vasil'yevich -- helicopter commander.
8. Brodin, Boris Semenovich -- flagship navigator.
9. Baydala, Grigoriy Pavlovich -- navigator.
10. Flaksin, Vladimir Semenovich -- navigator.
11. Chumbarov, Vasiliiy Fedorovich -- navigator.
12. Alekseyev, Aleksandr Andreyevich -- flight mechanic.
13. Yeremin, Petr Aver'yanovich -- flight mechanic.
14. Yefimov, Boris Aleksandrovich -- flight mechanic.
15. Ius, Fedor Yemel'yanovich -- flight mechanic.
16. Men'shikov, Yerofey Nikolayevich -- flight mechanic.
17. Penyushin, Ariy Viktorovich -- flight mechanic.
18. Sergeyev, Viktor Mikhaylovich -- flight mechanic.
19. Tyagunov, Anatoliy Mikhaylovich -- flight mechanic.
20. Zorin, Nikolay Gavrilovich -- senior flight radioman.
21. Simonovich, Foma Yefremovich -- flight radioman.
22. Sulim, Mikhail Kuz'mich -- flight radioman.
23. Chernov, Ivan Tikhonovich -- flight radioman.

24. Berdnikov, Nikolay Vasil'yevich -- chief staff engineer.
25. Ioselevich, Pavel Vladimirovich -- aircraft equipment engineer.
26. Kovalev, Boris Nikolayevich -- radio equipment technician.
27. Novikov, Nikolay Stepanovich -- radio equipment technician.
28. Genyuk, Konstantin Konstantinovich -- operations engineer.
29. Bogachev, Georgiy Petrovich -- aircraft technician.
30. Luk'yanyov, Georgiy Pavlovich -- aircraft technician.
31. Mikhaylov, Boris Ivanovich -- aircraft technician.
32. Sillin, Vladimir Vasil'yevich -- aircraft technician.
33. Utkin, Mikhail Vladimirovich -- aircraft technician.
34. Medvedev, Andrey Petrovich -- parachute service inspector, airport commandant.

Ground Transport Staff

1. Nikolayev, Arkadiy Fedorovich -- staff chief, Candidate of Technical Sciences.
2. Burkhanov, Grigoriy Fedorovich -- assistant staff chief, chief of "Pingvin" ("Penguin") tractor group.
3. Romakin, Stanislav Vasil'yevich -- senior engineer.
4. Agafonnikov, Askol'd Mikhaylovich -- navigator, radioman.
5. Avsyuk, Vladimir Nikolayevich -- navigator, gravimetrist.
6. Denin, Leonid Dmitriyevich -- driver-mechanic.
7. Gumenyuk, Vasiliy Ivanovich -- driver-mechanic.
8. Davydov, Georgiy Dmitriyevich -- driver-mechanic.
9. Yerokhin, Aleksandr Pavlovich -- driver-mechanic.
10. Zhandarmov, Anatoliy Pavlovich -- driver-mechanic.
11. Zadvornikov, Vladimir Fedorovich -- driver-mechanic.
12. Zanin, Nikolay Mikhaylovich -- driver-mechanic.
13. Ivanov, Anatoliy Fedorovich -- driver-mechanic.
14. Kantuyev, Viktor Ivanovich -- driver-mechanic.
15. Kashkin, Sergey Konstantinovich -- driver-mechanic.
16. Krylov, Lev Aleksandrovich -- driver-mechanic.
17. Kuretov, Nikolay Alekseyevich -- driver-mechanic.
18. Milov, Yevgeniy Dmitriyevich -- driver mechanic.
19. Monakhov, Leonid Mikhaylovich -- driver-mechanic.
20. Morozov, Yevgeniy Georgiyevich -- driver-mechanic.
21. Farshin, Aleksey Filippovich -- driver-mechanic.
22. Pugachev, Nikolay Pavlovich -- driver-mechanic.
23. Rodin, Viktor Fedorovich -- driver-mechanic.
24. Sabitov, Zufer Latipovich -- driver-mechanic.
25. Savel'yev, Anatoliy Konstantinovich -- driver mechanic.
26. Stepanenko, Andrey Nazarovich -- driver-mechanic.
27. Chikhichen, Mikhail Andreyevich -- driver-mechanic.
28. Sherkunov, Feliks Andreyevich -- driver-mechanic.
29. Yurchenko, Vasiliy Ivanovich -- driver-mechanic.
30. Yagodkin, Mikhail Timofeyevich -- driver-mechanic.
31. Vakimchuk, Vasiliy Danilovich -- driver-mechanic.

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Auxiliary Staff

1. Vikulov, Viktor Mikhaylovich -- electrical power station chief, head power production engineer.
2. Bogdanov, Oleg Ivanovich -- power engineer.
3. Kuznetsov, Ivan Alekseyevich -- power station watch electro-mechanic.
4. Solov'yev, Vladimir Pavlovich -- power station watch electromechanic.
5. Tokarev, Sergey Dmitriyevich -- power station watch electromechanic.
6. Oleynik, Leonid Mefod'yevich -- electrical maintenance man.
7. Lomovitskiy, Grigoriy Alekseyevich -- mechanical shop chief.
8. Vasil'yev, Aleksandr Grigor'yevich -- instrument technician.
9. Borovskiy, Nikolay Semenovich -- machinist.
10. Burak, Nikolay Mikhaylovich -- assembly machinist.
11. Yefimov, Petr Ivanovich -- gas welder.
12. Golubenkov, Ivan Ivanovich -- commandant of settlement.
13. Sergeyev, Nikolay Petrovich -- warehouse director.
14. Morozov, Vladimir Mikhaylovich -- inspector.
15. Rogozin, Grigoriy Pavlovich -- bookkeeper.
16. Firsov, Petr Pavlovich -- carpenter.
17. Yemel'yanov, Aleksay Aleksandrovich -- carpenter.
18. Tyukin, Leonid Dmitriyevich -- carpenter.
19. Mayzorov, Pavel Nikolayevich -- quartermaster.
20. Liflyandskiy, Dmitriy Borisovich -- physician.
21. Shleyfer, Solomon Petrovich -- stomatologist.
22. Tsvetkov, Pavel Andreyevich -- sanitation technician.
23. Nikoleyev, Glev Borisovich -- cook.
24. Glukhov, Vladimir Sergeyevich -- cook.
25. Smedov, Valentin Vladimirovich -- baker.
26. Istomin, Ivan Aleksandrovich -- food storekeeper.

Sovetskaya Station

1. Boborykin, Vitaliy Kuz'mich -- station chief.
2. Mayevskiy, Genrikh Eduardovich -- aerological engineer.
3. Chugunov, Nikolay Aleksandrovich (deceased) -- aerological engineer.
4. Malikov, German Aleksandrovich -- senior radio technician and radioman.
5. Zotov, Aleksandr Sergeyevich -- mechanic, electrician.
6. Rogozhin, Aleksey Dmitriyevich -- aircraft mechanic.
7. Konstantinov, Vladimir Gavrilovich -- cook, physician.

Vostok Station

1. Sidorov, Vasilii Semenovich -- station chief.
2. Kolomiytsev, Ordinard Panteleymonovich -- junior scientific associate, ionosphericist.
3. Shanray, Georgiy Fedosseyevich -- senior aerological engineer.

4. Maysuradze, Pavel Aleksandrovich -- senior magnetological engineer.
5. Mitin, Pavel Fedorovich -- aerological engineer.
6. Rybchenko, Mikhail Klement'yevich -- radar engineer.
7. Chernov, Boris Sergeyevich -- senior radio technician, radioman.
8. Kasukhin, Valeriy Aleksandrovich -- mechanic, electrician.
9. Chatanov, Dmitriy Petrovich -- aircraft mechanic.
10. Kireyev, Aleksandr Kuz'mich -- mechanic.
11. Lapkin, Konstantin Vasil'yevich -- cook, physician.

Komsomol'skaya Station

1. Fokin, Mikhail Alekseyevich -- station chief.
2. Sorokin, Pavel Vasil'yevich -- senior radio technician.
3. Ivanov, Igor' Alekseyevich -- cook, meteorologist.
4. Morozov, Aleksandr Ivanovich -- aircraft mechanic.
5. Ustinov, Aleksandr Mikhaylovich -- mechanic.

Pionerskaya Station

1. Silin, Grigoriy Melent'yevich -- station chief.
2. Vikitin, Yevgeniy Pavlovich -- aerological engineer.
3. Subanov, Yuriy Nikolayevich -- magnetological engineer.
4. Sushanskiy, Vladimir Il'yich -- senior radio technician, radioman.
5. Kurdgelaidez, Garsevan Melitonovich -- cook, meteorologist.
6. Klimov, Vasiliy Matveyevich -- aircraft mechanic.

Oazis Station

1. Imarekov, Boris Ivanovich -- station chief.
2. Shnneyerov, Boris Yefimovich -- junior scientific associate, meteorologist.
3. Tulapov, Boris Ivanovich -- junior scientific associate, seismologist.
4. Parshin, Ivan Andreyevich -- junior scientific associate, magnetologist.
5. Bobynin, Boris Vasil'yevich -- junior scientific associate, specialist in terrestrial currents and polar airglow.
6. Fedorov, Yuriy Konstantinovich -- aerological engineer.
7. Yakovlev, Vyacheslav Mikhaylovich -- senior radio technician.
8. Matveyenko, Petr Kuz'mich -- mechanic.

Seasonal Staff

1. Kunin, Vladimir Mikhaylovich -- chief of construction and erection crew.
2. Uspenskiy, Yevgeniy Aleksandrovich -- machinist foreman.
3. Lyzov, Mikhail Ivanovich -- machinist, assemblyman.

4. Lepeshkin, Nikolay Semenovich -- carpenter foreman.
5. Novatorov, Nikolay Fedorovich -- carpenter.
6. Zakharov, Aleksandr Ivanovich -- master sanitation technician.
7. Amosov, Vladimir Mikhaylovich -- driver-mechanic.
8. Goryunkov, Boris Yur'yevich -- driver-mechanic.
9. Vostrukhin, Vladimir Maksimovich -- tractor operator.
10. Gerasev, Nikolay Steforovich -- tractor operator.
11. Zanin, Aleksey Nikolayevich -- tractor operator.
12. Shepelev, Yurii Fedorovich -- tractor operator.
13. Gass, Vladimir Pavlovich -- master electrical welder.
14. Voznesenskiy, Oleg Vladimirovich -- navigator, radioman.
15. Krivosheyev, Nikolay Georgiyevich -- flight navigator.
16. Bulychev, Aleksey Andreyevich -- flight mechanic.
17. Petunin, Sergey Mikhaylovich -- radio engineer.
18. Koverovich, Yevgeniy Pavlovich -- handymen.
19. Mustafin, Nugulla Veliakhmetovich -- hydrologist, Candidate of Geographical Sciences.
20. Smul, Yukhan Yur'yevich -- correspondent of newspaper *Pravda*.

USSR Representatives in Foreign Arctic Expeditions

1. Ostapenko, Pavel Dmitriyevich -- synoptologist, Candidate of Geographical Sciences, representative of USSR expedition at US Little America Station.

Foreign Staff

1. Rubin, M.D. -- synoptologist, representative of US at Mirnyy.
2. Mrkos, A. -- geophysicist, representative of Czechoslovakian Academy of Sciences at Mirnyy.

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ACADEMICIANS OF THE KAZAKH ACADEMY ELECTED BY THE
GENERAL MEETING OF THE KAZAKH ACADEMY, 29 MAY 1962

[Following is the translation of a series of items in the Russian-language periodical Vestnik Akademii Nauk Kazakhskoy SSR (Herald of the Academy of Sciences Kazakh SSR), Vol 18, No 6 (207), Alma-Ata, June 1962, cover plus ten unnumbered pages.]

USANOVICH, Mikhail Il'yich (born 1894) was elected Academician of the AN (Akademiya Nauk -- Academy of Sciences) Kazakh SSR in physical chemistry.

M.I. Usanovich graduated from Kiev University in 1917. In 1938 he received the degree of Doctor of Chemical Sciences and the title of Professor in the physical chemistry department from the Higher Attestation Commission.

Of considerable importance are his teaching activities in the higher educational institutions of the Soviet Union, especially at the Central Asian State University and at the Kazakh State University. M.I. Usanovich is doing a great deal to prepare highly-qualified scientific cadres.

M.I. Usanovich has about 250 published papers to his credit in various fields of physical chemistry and physico-chemical analysis.

His generalized theory of acids and bases, which takes in all basic types of acid-base interaction in nature is known both in the Soviet Union and abroad. Also widely known are the studies of M.I. Usanovich in the field of physico-chemical analysis.

A number of studies of M.I. Usanovich have acquired great practical importance, including those on the electro-chemistry of non-hydrous solutions which can be applied in the production of certain high-purity metals.

For his outstanding achievements in the field of chemistry, M.I. Usanovich has received two orders of the "Red Banner of Labor", Honor Scrolls of the Supreme Soviet Uzbek SSR and the Supreme Soviet Kazakh SSR.

KUZ'MIN, Valentin Petrovich (born 1893) was elected Academician of the AN Kazakh SSR in genetics and seed culture selection. He graduated from commerce school in 1912. He majored in agriculture and especially genetics and selection at the Plant Studies Scientific Research Institute (VIR -- Vsesoyuznyy Institut Rasteniyevodstva -- All-Union Plant Studies Institute), where he remained from 1921 through 1935. In 1932, the scientific board of the Institute granted him the title of scientific specialist.

Since 1935 V.P. Kuz'min has headed the selection and genetics section of the Shartandinskaya Agricultural Experimental Station on whose basis the All-Union Seed Culture Institute was subsequently organized.

V.P. worked out the problem of the expansion of wheat growing into the North and the non-black earth areas of our country. At the same time, V.P. Kuz'min was one of the organizers of the state agricultural varieties testing program (Gorsortseti), and one the basis of the first few years' testing work, he worked out the first plan for the regional allocation of seed culture varieties in the northern non-black earth zone.

V.P. Kuz'min developed: 9 varieties of wheat (including two hard varieties), 1 variety of rye, 1 variety of peas, 2 sunflower varieties, 1 variety of saffron milk cap mushrooms, 1 variety of oil flax, 6 varieties of potatoes, etc., for a total of 23 varieties. Of these, 15 varieties have been assigned to regions and 8 are in the process of State variety testing.

For his achievements in the field of selection, V.P. Kuz'min has twice received the "Red Banner of Labor", five medals, and Honor Scrolls of the Supreme Soviet Kazakh SSR.

V.P. Kuz'min also has the title of State Prize Laureate. In 1962 he received the degree of Doctor of Sciences for the sum of his efforts. V.P. Kuz'min is the author of over 60 published papers.

NEMENOV, Leonid Mikhaylovich (born 1905) was elected Academician of the AN Kazakh SSR in nuclear physics.

In 1929 L.M. Nemenov graduated from Leningrad University in experimental physics. He has been Doctor of Technical Sciences since 1948 and is a Professor.

L.M. Nemenov is a leading specialist on modern experimental techniques in physics.

The first studies of L.M. Nemenov, carried out at the Leningrad Physico-Technical Institute under the supervision of A.F. Ioffe, dealt with the physics of dielectrics.

Since 1931, L.M. Nemenov was concerned for a number of years with the electrical and photoelectric properties of semiconductors. Then L.M. Nemenov worked in I.V. Kurchatov's group studying artificial radioactivity.

In 1935-1937 L.M. Nemenov worked in the field of mass spectrography and built the first Soviet precision mass spec-

trometer for mass defect measurements.

Since 1943 L.M. Nemenov has been working at the Atomic Energy Institute imeni I.V. Kurchatov of the AN USSR. During his tenure at the Institute, he supervised the design and testing of two cyclotrons, one of them the largest in the USSR, and also the design of a three-meter cyclotron for the acceleration of multiply-charged ions.

L.M. Nemenov is the author and coauthor of about 70 papers published in periodicals and special reports.

L.M. Nemenov has received two Orders of Lenin, the "Red Banner of Labor", two "Badges of Merit" and a medal. In 1953, L.M. Nemenov was named State Prize Laureate.

ZHAUTYKOV, Orymbek Akhmetbekovich (born 1911) was elected Academician of the AN Kazakh SSR in mathematics.

O.A. Zhautykov graduated from the physico-mathematical department of the Kazakh Pedagogical Institute imeni Abay in 1934. In 1961 he successfully defended his thesis for the degree of Doctor of Physico-Mathematical Sciences and in that same year received the title of Professor. He is working actively in the field of differential equation and has had over 40 of his papers published.

Since 1951 O.A. Zhautykov has been head of the Mathematics and Mechanics Sector of the AN Kazakh SSR.

O.A. Zhautykov has made important contributions in the training of national cadres; he is the author of the first Kazakh text on higher mathematics and a number of popular science mathematics books in the Kazakh language; he is likewise a coauthor of a technical Russian-Kazakh dictionary.

The basic theme of O.A. Zhautykov's research are infinite systems of differential equations.

O.A. Zhautykov first established the condition of the invariance of Poisson brackets for functions of a countable set of arguments, solved the Cauchy problem for infinite systems of differential equations (partial) and examined the stability of the solution to this problem. He has worked out a new method of characteristics different from the classical one.

O.A. Zhautykov generalized the Poincare theorem of the character of solutions to infinite systems containing parameters; the results were applied to the study of certain problems in perturbation theory. Combining the methods of operational calculus and functional analysis, O.A. Zhautykov was able to apply the results of his studies to the solution of the dynamic stability of elastic systems, particularly to the determination of the dynamic bending of a rectilinear rod.

RAFIKOV, Sagid Raufovich (born 1912) was elected Academician of the AN Kazakh SSR in polymer chemistry.

S.R. Rafikov graduated from the Kazan' Metallurgical Institute imeni S.M. Kirov in 1937.

In 1942 he defended his candidatorial dissertation, and in 1948 his doctoral dissertation. In 1951 he received the title of Professor.

Of great importance are the studies of S.R. Rafikov on the mechanism and conditions of vapor-phase oxidation of petroleum hydrocarbons by oxygen in the air. As a result of these studies, methods were developed for the synthesis of a number of valuable oxygen and nitrogen-containing monomers used as a basis in the preparation of polyamides suitable for use in the manufacture of heat-resistant glasses and plastics, as well as high-quality synthetic fibers.

One of the major projects carried out under the supervision of S.R. Rafikov were studies on plastic coatings for insulating underground piping; these were conducted by the Chemical Sciences Institute AN Kazakh SSR in cooperation with the Petroleum Institute AN Kazakh SSR, the Gur'yevsk Freight Transport Administration and the Novosibirsk Camphor Plant.

An important result of another project was the development of a cheap new binding material for plastics manufactured from cheap and abundant petroleum refining wastes. On the basis of these plastics, the Orenburg Regeneration Plant began the planned production of the rezinoroid (rubberoid) waterproof material.

The scientific writings of S.R. Rafikov include 150 papers and two monographs: Introduction to the Study of High-Molecular Compounds and The Synthesis and Study of High-Molecular Compounds, over 100 articles and brochures and 20 patents.

PONOMAREV, Viktor Dmitriyevich (born 1909) was elected Academician of the AN Kazakh SSR in hydro- and electrometallurgy.

In 1934 V.D. Ponomarev graduated from the Ural Chemico-Technological Institute. In 1939 he defended his candidatorial dissertation and in 1947 his doctoral thesis. In 1948 he received the title of Professor.

In 1953 he was elected Corresponding Member of the AN Kazakh SSR.

V.D. Ponomarev is the author of over 300 papers, about 200 of which have been published.

Particularly important are his studies on the metallurgy of light and rare metals, in which he proposed a number of original and quite new technological schemes based on his own theoretical hypotheses.

New theoretical views of the mechanism of processes involved in the solution of solid substances, confirmed by numerous studies, enabled V.D. Ponomarev to find original approaches to the solution of problems of acceleration and improvement of the major hydrometallurgical operations and allowed him to provide the aluminum industry with simple and effective methods for alumina ores which are yielding considerable economic savings.

Professor V.D. Ponomarev is supervising important work on the extraction of rare and diffuse elements from the raw ores of Kazakhstan. He has developed and suggested an original scheme for reprocessing lead plant dust involving the complex extraction of heavy and diffuse metals.

For his great contributions to the successful solution of non-ferrous metallurgical problems for the Republic, he was named Honored Scientist and Technologist of the Kazakh SSR in 1954.

KEL'MAN, Veniamin Moiseyevich (born 1915) was elected Academician of the AN Kazakh SSR in nuclear physics. He graduated from Kiev State University in 1937 as an electrophysicist. Doctor of Physico-Mathematical Sciences since 1948, Professor.

The main area of V.M. Kel'man's interest is electron optics.

V.M. Kel'man began his scientific career in 1937 at the Khar'kov Physico-Technical Institute. Together with M.I. Korsunskiy he designed an original beta spectrometer with improved focusing, which was later called the "ketron".

Since 1951, V.M. Kel'man has headed the nuclear spectroscopy laboratory of the Leningrad Physico-Technical Institute AN USSR.

During his work there, he designed new types of spectrometers. Special attention should be directed to the latest proposals of V.M. Kel'man outlining the new paths of development of precision mass spectrometry. In addition to this earlier "magnetic prism" which served as a basis for the design of a prismatic mass spectrometer, he recently suggested and developed an "electrostatic prism" which represents an electrostatic analogue of the well-known optical prism.

In 1959, V.M. Kel'man and S.Ya. Yavor published a monograph entitled Electron Optics, a thorough and systematic presentation of the subject.

BAYKONUROV, Omirkhan Aymagambetovich (born 1912) was elected Academician of the AN Kazakh SSR in the development of ore deposits.

In 1940 he graduated from the Kazakh Mining Institute in the department of mineral ore development.

For 17 years O.A. Baykonurov Worked in the Dzhezkazgan Ore Metallurgical Combine, and in 1952 was appointed director of the Kazakh Polytechnic Institute. He defended his candidatorial dissertation in 1951, received his confirmation as docent in 1954, and became a Professor in 1959.

O.A. Baykonurov is the author of 37 scientific and 38 organizational-technical papers on the problems of the mining industry and science and the training of engineering cadres in Kazakhstan.

He is the recipient of an Order of Lenin, medals, and honorable scroll, and scrolls of the Supreme Soviet Kazakh SSR.

KORSUNSKIY, Moisey Izrailevich (born 1903) was elected Academician of the AN SSR in semiconductor physics.

M.I. Korsunskiy graduated from the Leningrad Polytechnic Institute in 1926. Doctor of Physico-Mathematical Sciences since 1941, Professor. Author of over 120 scientific papers.

Embarking on his scientific career in 1925 at the Leningrad Physico-Technical Institute, M.I. Korsunskiy then moved to Tomsk where he was one of the founders of the Siberian Physico-Technical Institute. In 1938 he started working in Khar'kov, first at the Physico-Technical Institute of the AN Ukrainian SSR and then at the Khar'kov Polytechnic Institute where as head of the general and theoretical physics section he supervised research on gas discharges and the work of the thematic semiconductor laboratory.

During the World War II years, M.I. Korsunskiy was in Alma-Ata where he made important contributions to the non-ferrous metallurgy of Kazakhstan, for which he was twice awarded the Scroll of the Supreme Soviet Kazakh SSR.

M.I. Korsunskiy is the author of a number of monographs including X-ray Physics, The Neutron, and Atomic Nuclear Isomerism. He also wrote the excellent popular science work entitled The Atomic Nucleus reprinted five times and translated into 12 languages of the USSR and foreign languages.

TAYMANOV, Asan Dabsovich (born 1917) was elected Academician of the Academy of Sciences Kazakh SSR in mathematics.

Upon graduation from the Ural Pedagogical Institute imeni A.S. Pushkin in 1936, A.D. Taymanov remained at the that institution as assistant in the mathematics department. In 1938 he entered the graduate division at the Moscow State Pedagogical Institute imeni V.I. Lenin. His studies were interrupted by the War, in which he participated.

In 1947 A.D. Taymanov successfully defended his candidatorial dissertation. Doctor of Physico-Mathematical Sciences since 1961.

A.D. Taymanov is a talented scientist, with significant contributions to the development of modern mathematical logic and the theory of topological representations. He determined the necessary and sufficient conditions for the reducibility of formulas for narrow predicate calculus to the so-called Horn form.

Also of great importance are the characteristics of various axiomatizing classes of models found by A.D. Taymanov which go far in generalizing the well-known results of Tarski, Los'-Sushko, Robinson, and Chan.

The topological works of A.D. Taymanov deal with a wide circle of problems of set-theoretical topology. In particular, he proved theorems on the possible extension of any continuous representation to an image open without enrichment, the description of closed representations with the aid of properties of representation extension to bicomplete expansion, the preservation of the monotonicity of an open representation upon extension to bicomplete expansion.

KOZLOVSKIY, Mikhail Tikhonovich (born 1903) was elected Academician of the AN Kazakh in amalgam chemistry.

In 1938 M.T. Kozlovskiy received the degree of Candidate of Chemical Sciences without dissertation from the Khar'kov Chemical-Technological Institute on the basis of his published works. In 1952 he defended his Doctoral dissertation and in 1953 granted a professorship in analytical chemistry.

The scientific-pedagogical and research career of M.T. Kozlovskiy spans 32 years, of which 22 years were spent within the system of the Academy of Sciences Kazakh SSR (Institute of Chemical Sciences).

M.T. Kozlovskiy is a major specialist in the field of analytical chemistry and amalgam metallurgy. He was the leader in the organization and development of a new scientific field in Kazakhstan -- amalgam chemistry -- which holds great promise for the creation of improved methods of analytic control and technological processes for the production of non-ferrous and rare metals of high purity. On the basis of numerous laboratory studies, technological schemes were suggested for the production of a number of rare metals from lead plant dust. The amalgam method was likewise tested in the production of indium and cadmium and also in the refinement of these metals.

M.T. Kozlovskiy has described the results of his work in over 110 published works, including the monograph Mercury and Amalgams in Electrochemical Methods of Analysis.

For his brilliant and long service, M.T. Kozlovskiy has received Scrolls of the Supreme Soviet Kazakh SSR and the title of Honored Scientist of the Kazakh SSR. He has received Orders of the "Red Banner of Labor" and the "Badge of Merit", as well as medals.

ZOLOTAREV, Teodor Lazarevich (born 1904) was elected Academician of the AN Kazakh SSR in general power engineering.

T.L. Zolotarev is a hydromechanical engineer, Professor since 1935, and Doctor of Technical Sciences since 1937.

T.L. Zolotarev is an outstanding specialist in hydroelectric power production. He has published over 200 papers in 13 languages. Among them are the comprehensive studies entitled:

The Hydroelectric Power Resources of the USSR. The Hydroelectric Plant in the Electrical Power System. Hydroelectric Power Engineering. A History of Hydroelectric Power in the USSR.

T.L. Zolotarev is the initiator and one of the participants in the creation of a hydroelectric power engineering department at the Moscow Power Production Institute. He also had a direct hand in the development of a unique dynamic laboratory model of a hydroelectric power system.

T.L. Zolotarev has carried out a number of scientific research studies, including regime studies for the largest hydroelectric stations in the country: Eneprorskaya GES, the Verkhne-Volzhskiy GES imeni V.I. Lenin and the 22d CPSU Congress, the Noyesibirek GES, Kama GES, et al.

In addition to this scientific-pedagogical work, T.L. Zolotarev is engaged in a wide range of consulting and public activities on the problems of hydroelectric power development. Recipient of "Badge of Merit" and a medal.

GRUZINOV, Vladimir Konstantinovich (born 1903) was elected Academician of the AN Kazakh SSR in ferrous metallurgy.

In 1927 V.K. Gruzinov graduated from the Siberian Technological Institute imeni F.E. Dzerzhinskii in Tomsk in the metallurgical engineering department.

In 1945 he defended a dissertation for the degree of Candidate of Technical Sciences, and in 1946 began to work at the Ural Polytechnic Institute imeni S.M. Kirov as docent in the metallurgy and pig iron department. In addition to his teaching activities there, he engaged in research.

In 1959 V.K. Gruzinov defended a dissertation for his doctorate and in 1960 received the title of Professor.

V.K. Gruzinov is the author of 101 works, 55 of them published and 7 are patented inventions.

1949 saw the publication of V.K. Gruzinov's large work entitled The Mechanical Equipment of Blast Furnace Plants (2d edition -- 1954-1959) which received fine reviews from specialists.

In 1960 he published Programmed Loading Control of Blast Furnace Gas Flow, generalizing long-range studies on the theory and practice of program-loaded blast furnace operation.

SIL'CHENKO, Mitrofan Semenovich (born 1898) was elected Academician of the AN Kazakh SSR in literary scholarship.

In 1924 M.S. Sil'chenko graduated from the Voronezh State University. He defended his candidatorial and doctoral dissertations in 1942 and 1957 respectively.

In 1958 he was granted the title of Professor. In 1921-1931 M.S. Sil'chenko was instructor in Russian literature in the workers' department (rabfak) of Voronezh State University; in 1931 he assumed the post of docent in Russian literature at the Kazakh State Pedagogical Institute. In 1958 he was made

chairman of the Russian and foreign literature department of the Kazakh Pedagogical Institute and the head of the language and literature section of the AN Kazakh SSR.

In 1958 he was elected Corresponding Member of the AN Kazakh SSR.

M.S. Sil'chenko is the author of over 80 published scholarly works; among the larger ones are the monograph A Creative Biography of Abay, chapters in the works An Outline of Soviet Kazakh Popular Poetry and A History of Kazakh Literature and textbooks on Russian and Kazakh literature for the schools of Kazakhstan. In 1957 he was awarded the honorary title of Honored Scientist of the Kazakh SSR.